

REMARKS

Claims 4-7 are pending in the application. Claims 1-3 are cancelled without prejudice to or disclaimer of the subject matter therein. Claims 5-7 are new. Claim 4 is amended. Support for the amendments to claim 4 may be found in the specification at page 6, lines 21-23 and page 10, line 28-page 11, line 8. Support for the new claims may be found in the specification at page 6, lines 18-25.

Restriction Requirement

The Examiner required restriction under 35 U.S.C. § 121 between Group I, consisting of claims 1-3, and Group II consisting of claim 4. On October 22, 2002, Applicants' representative provisionally elected to prosecute Group II with traverse. Applicants affirm the election of Group II.

Objection to the Drawings

The Examiner required that FIGs. 1 and 2 be corrected to include a legend designating them as prior art, and objected to the drawings because reference numerals 4a and 4b on FIG. 4 are not mentioned in the description. With this Amendment and Reply, Applicants submit a Request for Approval of Drawing Changes with the proposed changes marked in red, adding the legend to FIGs. 1 and 2 and removing reference numerals 4a and 4b from FIG. 4. The changes are indicated in red on the attached copies of the originally filed drawings. Corrected formal drawings will be submitted after a Notice of Allowance is issued. Accordingly, Applicants respectfully request that the Examiner withdraw the objection.

Rejections Under 35 U.S.C. § 103

Mabuchi *et al.* in view of Nagahama *et al.*

Claim 4 stands rejected under 35 U.S.C. § 103 as being unpatentable over JP 10-214823 to Mabuchi *et al.* (Mabuchi) in view of JP 11-228172 to Nagahama *et al.* (Nagahama). Claim 4 relates to a plasma processing apparatus for carrying out a process with plasma generated by using an electromagnetic wave. The apparatus includes a component made of glass, which is transparent to the electromagnetic wave and is used for introducing the electromagnetic wave into a chamber in which the plasma is generated. The apparatus also includes a cover component including a plurality of openings, into which the glass component is fitted, and an antenna fixed to the cover component. The glass includes a first glass phase consisting essentially of Si and O, and a second glass phase consisting essentially of Si, Al, and O. The second glass phase has 0.1-10 parts aluminum-containing oxide powder added to 100 parts quartz powder. The cover component and plurality of openings allow more uniform introduction of microwaves into the chamber. See Specification, page 12, lines 6-9.

The Examiner relies upon Mabuchi for an asserted disclosure of a plasma processing apparatus and upon Nagahama for an asserted disclosure of a glass. Mabuchi discloses a plasma treatment device having a dielectric layer 32 and a microwave introduction aperture 14 above a reaction container 11. A recess 14a is formed in the aperture 14 facing a sample table 15. See Mabuchi, Abstract; FIG. 1. The aperture 14 may be formed of a dielectric material, such as a quartz glass and an alumina. See Mabuchi, paragraph 23. Metal plates 33 cover the dielectric layer 32. See Mabuchi, paragraph 22.

Nagahama discloses a plasma corrosion resistant glass. The glass may be used on a semi-conductor production device. See Nagahama, abstract.

However, neither Mabuchi nor Nagahama, alone or in combination, teaches or suggests all the features recited in claim 4. Claim 4 recites "a cover component including a plurality of openings, into which said glass component is fitted, and an antenna fixed to said cover component." Mabuchi teaches a plasma treatment device having a dielectric layer 32 covered with metal plates 33. However, Mabuchi does not teach or suggest a cover component including a plurality of openings into which a glass component is fitted, and an antenna fixed to the cover component. Nagahama does not cure this deficiency. Nagahama teaches a plasma resistant glass. Nagahama does not provide any teaching of any cover component and antenna as recited in claim 4.

Because neither Mabuchi nor Nagahama, alone or in combination, teaches or suggests all the features recited in claim 4, claim 4 is not unpatentable in view these references. Applicants respectfully request that the Examiner withdraw the rejection and allow claim 4.

Mabuchi *et al.* in view of U.S. Patent No. 4,009,042 to Rittler

Claim 4 stands rejected under 35 U.S.C. § 103 as being unpatentable over Mabuchi in view of U.S. Patent No. 4,009,042 to Rittler. However, the combination of Mabuchi and Rittler do not teach or suggest all the features of claim 4. As stated above, Mabuchi does not teach or suggest a "cover component including a plurality of openings, into which said glass component is fitted, and an antenna fixed to said cover component." Rittler does not cure this deficiency. Rittler discloses a transparent, infra-

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red transmitting glass ceramic, useful for cookingware. Rittler does not provide any teaching of a cover component as recited in claim 4.

Additionally, claim 4 recites a glass 0.1-10 parts aluminum-containing oxide powder added to 100 parts quartz powder. Neither Mabuchi nor Rittler teaches or suggests a glass having such a feature. Mabuchi discloses an introduction aperture 14 formed with quartz glass and an alumina. See Mabuchi, paragraph 23. However, Mabuchi does not disclose a glass having the features recited in the claim. Rittler teaches a glass-ceramic comprising 50-65% quartz (SiO_2) and 20-30% alumina (Al_2O_3). See Rittler, claim 1, abstract; see *also* Office Action, page 5. However, there is no teaching or suggestion of a glass having 0.1-10 parts aluminum-containing oxide powder added to 100 parts quartz powder.

Neither Mabuchi nor Rittler, alone or in combination, teaches or suggests all the features of claim 4. Thus, claim 4 is patentable over this combination of references. Applicants respectfully request that the Examiner reconsider and withdraw the rejection.

Mabuchi in view of U.S. Patent No. 4,266,978 to Prochazka

Claim 4 stands rejected under 35 U.S.C. § 103 as being unpatentable over Mabuchi in view of U.S. Patent No. 4,266,978 to Prochazka. However, the combination of Mabuchi and Prochazka does not teach or suggest all the features of claim 4. As stated above, Mabuchi does not teach or suggest a "cover component including a plurality of openings, into which said glass component is fitted, and an antenna fixed to said cover component." Prochazka does not cure this deficiency. Prochazka teaches a synthesis of mixed oxide composition. Prochazka does not provide any teaching of a component such as the cover component recited in claim 4.

Additionally, claim 4 recites a glass having 0.1-10 parts aluminum-containing oxide powder added to 100 parts quartz powder. Neither Mabuchi nor Rittler teaches or suggests such a feature. Mabuchi teaches an introduction aperture 14 formed with quartz glass and an alumina. Prochazka teaches a ceramic formed of an oxide mixture of mullite (an aluminum silicate). See Prochazka, column 2, lines 47-49. However, there is no teaching or suggestion of a glass having 0.1-10 parts aluminum-containing oxide powder added to 100 parts quartz powder.

Neither Mabuchi nor Rittler, alone or in combination, teaches or suggests all the features of claim 4. Accordingly, claim 4 is patentable over this combination of references. Applicants respectfully request that the Examiner reconsider and withdraw the rejection.

U.S. Patent No. 6,277,251 to Hwang *et al.* in view of Prochazka

Claim 4 stands rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 6,277,251 to Hwang *et al.* (Hwang) in view of Prochazka. The Examiner relies upon Hwang for an asserted teaching of a plasma processing apparatus.

Hwang teaches a plasma reactor having a liner assembly 11 that may be manufactured from any suitable material (e.g. a dielectric material, etc.) including glass, alumina, aluminum silicate, polymers and others. See Hwang, column 12, lines 21-27. The reactor also includes a dielectric ceiling 110.

However, Hwang does not teach or suggest a "cover component including a plurality of openings, into which said glass component is fitted, and an antenna fixed to said cover component," as recited in claim 4. Prochazka does not cure this deficiency.

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As set forth above, Prochazka does not provide any teaching of a cover component. As such, the combination of Hwang and Prochazka does not render claim 4 unpatentable.

Further, for the reasons set forth above, the ceramic taught in Prochazka is not the same as the claimed glass. Accordingly, Applicants respectfully request that the Examiner withdraw this rejection.

New Claims

New claims 5-7 depend from and add additional features to independent claim 4. Accordingly, these claims are patentable for at least the reasons set forth above with regard to claim 4. Applicants respectfully request that the Examiner allow these claims.

Conclusion

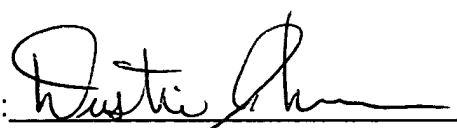
Each of the objections and rejections have been overcome or otherwise rendered moot. Accordingly, Applicants respectfully request that the that the Examiner reconsider and withdraw the objections and rejections to claim 4, and pass claims 4-7 to allowance.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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APPENDIX
VERSION WITH MARKINGS TO SHOW CHANGES MADE

AMENDMENTS TO THE CLAIMS

Claims 1-3 are cancelled.

Claims 5-7 are new.

Claim 4 is amended as follows:

4. (Amended) A plasma processing apparatus for carrying out a process with plasma generated by using an electromagnetic wave, comprising:

a component made of glass, which is transparent to said electromagnetic wave and is used for introducing said electromagnetic wave into a chamber in which said plasma is generated,

a cover component including a plurality of openings, into which said glass component is fitted, and an antenna fixed to said cover component, wherein

said glass comprises:

a first glass phase consisting essentially of Si and O; and

a second glass phase consisting essentially of Si, Al, and O, wherein said second glass phase has 0.1-10 parts aluminum-containing oxide powder added to 100 parts quartz powder [a mass ratio of Al to Si of at least 0.01].

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